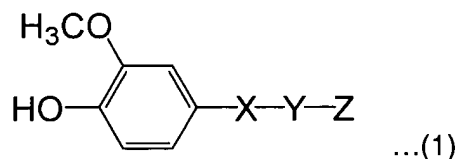


CLAIMS

What is claimed is:

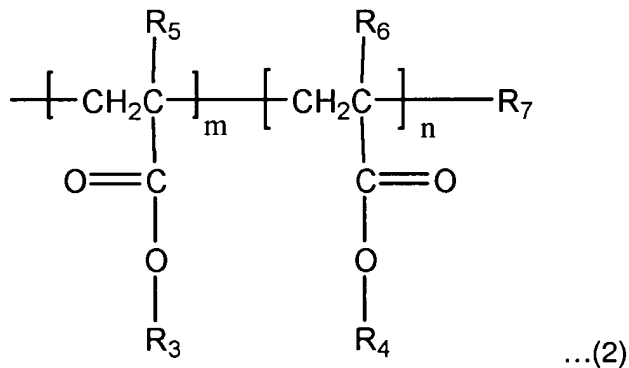
1. A 2-methoxyphenol derivative having formula (1) below:



where X is selected from the group consisting of a substituted or unsubstituted C_1 - C_{30} alkylene group, a substituted or unsubstituted C_2 - C_{30} alkenylene group, a substituted or unsubstituted C_2 - C_{30} alkynylene group, a substituted or unsubstituted C_6 - C_{30} arylene group, a substituted or unsubstituted C_7 - C_{30} arylalkylene group, a substituted or unsubstituted C_1 - C_{30} heteroalkylene group, a substituted or unsubstituted C_2 - C_{30} heteroarylene group, and a substituted or unsubstituted C_3 - C_{30} heteroarylalkylene group;

Y is selected from the group consisting of -O-, -NR-, -N(H)=N(H)-, -S-, -P-, -C(=O)-NR-, -NR-C(=O)-, -S(=O)(=O)O-, -C(=O)O-, -O-C(=O)-, -P(=O)O-, -C(=O)-O-C(=O)-, -C(=O)-S-C(=O)-, -C(=O)-NR-C(=O)-, -C(=NH)-O-C(=NH)-, -C(=S)-O-C(=S)-, -C(=NH)-NR-C(=NH)-, -C(=S)-NR-C(=S)-, -C(=NH)-S-C(=NH)-, and -C(=S)-S-C(=S)-, where R is a hydrogen atom or a C_1 - C_5 alkyl group; and

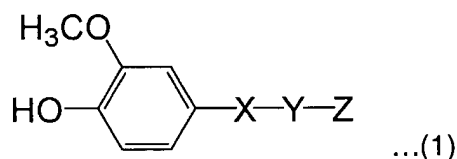
Z is selected from the group consisting of a group having the formula of $-(CH_2CH_2O)_a-(CH_2CH(CH_3)O)_b-(CH_2CH_2O)_c-H$ where a, b, and c are independently integers from 1 to 20 and a group having formula (2) below:



where R_3 and R_4 are independently C_1 - C_{10} alkyl groups; R_5 and R_6 are independently a hydrogen atom or a methyl group; R_7 is selected from the group consisting of a C_1 - C_{30} alkylene

group, a C₂-C₃₀ alkenylene group, a C₂-C₃₀ alkynylene group, a C₆-C₃₀ arylene group, a C₇-C₃₀ arylalkylene group, a C₁-C₃₀ heteroalkylene group, a C₂-C₃₀ heteroarylene group, and a C₃-C₃₀ heteroarylalkylene group, which have a terminal group selected from the group consisting of a phosphoric acid or a salt thereof, a phosphoric acid or a salt thereof, a sulfonic acid or a salt thereof, -OH, and -NH₂; and m and n are independently real numbers from 1 to 10 where m+n ≥ 2.

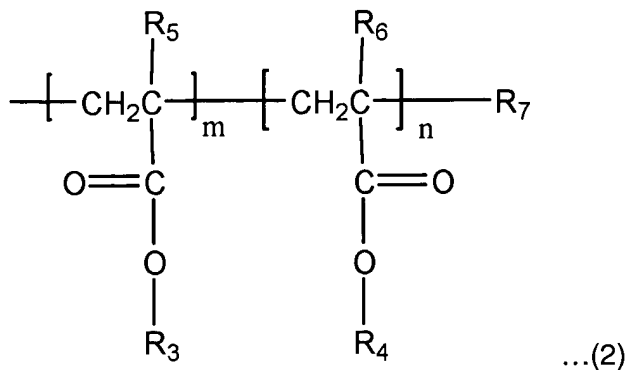
2. An ink composition comprising:
the 2-methoxyphenol derivative having formula (1) below:



where X is selected from the group consisting of a substituted or unsubstituted C₁-C₃₀ alkylene group, a substituted or unsubstituted C₂-C₃₀ alkenylene group, a substituted or unsubstituted C₂-C₃₀ alkynylene group, a substituted or unsubstituted C₆-C₃₀ arylene group, a substituted or unsubstituted C₇-C₃₀ arylalkylene group, a substituted or unsubstituted C₁-C₃₀ heteroalkylene group, a substituted or unsubstituted C₂-C₃₀ heteroarylene group, and a substituted or unsubstituted C₃-C₃₀ heteroarylalkylene group;

Y is selected from the group consisting of -O-, -NR-, -N(H)=N(H)-, -S-, -P-, -C(=O)-NR-, -NR-C(=O)-, -S(=O)(=O)O-, -C(=O)O-, -O-C(=O)-, -P(=O)O-, -C(=O)-O-C(=O)-, -C(=O)-S-C(=O)-, -C(=O)-NR-C(=O)-, -C(=NH)-O-C(=NH)-, -C(=S)-O-C(=S)-, -C(=NH)-NR-C(=NH)-, -C(=S)-NR-C(=S)-, -C(=NH)-S-C(=NH)-, and -C(=S)-S-C(=S)-, where R is a hydrogen atom or a C₁-C₅ alkyl group; and

Z is selected from the group consisting of a group having the formula of -(CH₂CH₂O)_a-(CH₂CH(CH₃)O)_b-(CH₂CH₂O)_c-H where a, b, and c are independently integers from 1 to 20 and a group having formula (2) below:



where R₃ and R₄ are independently C₁-C₁₀ alkyl groups; R₅ and R₆ are independently a hydrogen atom or a methyl group; R₇ is selected from the group consisting of a C₁-C₃₀ alkylene group, a C₂-C₃₀ alkenylene group, a C₂-C₃₀ alkynylene group, a C₆-C₃₀ arylene group, a C₇-C₃₀ arylalkylene group, a C₁-C₃₀ heteroalkylene group, a C₂-C₃₀ heteroarylene group, and a C₃-C₃₀ heteroarylalkylene group, which have a terminal group selected from the group consisting of a phosphoric acid or a salt thereof, a phosphoric acid or a salt thereof, a sulfonic acid or a salt thereof, -OH, and -NH₂; and m and n are independently real numbers from 1 to 10 where m+n ≥ 2;

an aqueous medium; and

a colorant.

3. The ink composition of claim 2, wherein an amount of the 2-methoxyphenol derivative is in a range of 0.1-20 parts by weight with respect to 100 parts by weight of the ink composition.

4. The ink composition of claim 2, wherein the aqueous medium is water or a mixture of water and an organic solvent.

5. The ink composition of claim 4, wherein the amount of the organic solvent in the aqueous medium is in a range of 2-50 parts by weight with respect to 100 parts by weight of the aqueous medium.

6. The ink composition of claim 4, wherein the organic solvent is at least one selected from the group consisting of methyl alcohol, ethyl alcohol, n-propyl alcohol, isopropyl alcohol, n-butyl alcohol, sec-butyl alcohol, t-butyl alcohol, isobutyl alcohol, acetone, methylethyl

ketone, diacetone alcohol, ethyl acetate, ethyl lactate, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, butylene glycol, 1,4-butane diol, 1,2,4-butane triol, 1,5-pentane diol, 1,2-hexane diol, 1,6-hexane diol, 1,2,6-hexane triol, hexylene glycol, glycerol, glycerol ethoxylate, trimethylolpropane ethoxylate, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, diethylene glycol methyl ether, diethylene glycol ethyl ether, diethylene glycol methyl ether, diethylene glycol ethyl ether, triethylene glycol monomethyl ether, triethylene glycol monoethyl ether, 2-pyrrolidone, N-methyl-2-pyrrolidone, caprolactam, dimethyl sulfoxide, tetramethylene sulfone, and thioglycol.

7. The ink composition according to claim 2, further including at least one of: a viscosity adjuster, a surfactant, a storage stabilizer, and a wetting agent.

8. The ink composition according to claim 7, wherein the viscosity adjuster includes at least one of: polyvinyl alcohol, casein, and carboxymethylcellulose.

9. The ink composition according to claim 8, wherein an amount of the viscosity adjuster is in a range of 0.1-5.0 parts by weight with respect to 100 parts by weight of a total weight of the 2-methoxy phenol derivative, the aqueous medium, and the colorant.

10. The ink composition according to claim 7, wherein the surfactant is one of: an anionic surfactant, a cationic surfactant and a nonionic surfactant.

11. The ink composition according to claim 10, wherein an amount of the surfactant is in a range of 0.1-5.0 parts by weight with respect to 100 parts by weight of the ink composition.

12. The ink composition according to claim 7, wherein the wetting agent of the ink composition includes at least one of: polyhydric alcohols, in particular, glycerin, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, dipropylene glycol, hexylene glycol, 1,3-butanediol, 1,4-butanediol, 1,5-pentanediol, 1,2-hexanediol, 1,6-hexanediol, 2-butene-1,4-diol, 2-methyl-2-pentanediol, and a mixture of the foregoing alcohols.

13. The ink composition according to claim 12, wherein an amount of the wetting agent is in a range of 2-40 parts by weight with respect to 100 parts by weight of the total weight of 2-methoxy phenol derivative, an aqueous medium, and a colorant.

14. The ink composition according to claim 2, wherein the colorant includes a disperse dye or pigment.

15. The ink composition according to claim 14, wherein the disperse dye is at least one of: DISPERSE YELLOW 3, DISPERSE YELLOW 54, DISPERSE YELLOW 82, DISPERSE RED 60, DISPERSE RED 375, DISPERSE VIOLET 17, DISPERSE RED 4, DISPERSE RED 11, DISPERSE BLUE 60, DISPERSE BLUE 359, DISPERSE BLUE 14, DISPERSE BLUE 3, DISPERSE BLUE 72, and DISPERSE BLUE 56.

16. The ink composition according to claim 14, wherein the pigment is at least one of: carbon black, graphite, vitreous carbon, activated charcoal, activated carbon, anthraquinone, phthalocyanine blue, phthalocyanine green, diazos, monoazos, pyranthrones, perylene, quinacridone, and indigoid pigments.

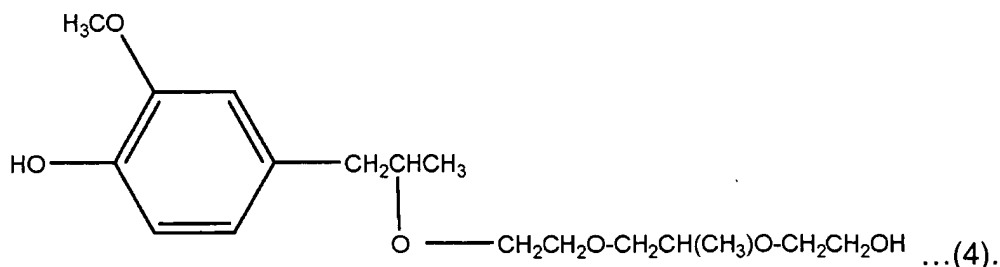
17. The ink composition according to claim 2, wherein an amount of the colorant is in a range of 0.1-20 parts by weight with respect to 100 parts by weight of the ink composition.

18. The ink composition according to claim 2, wherein an amount of the colorant is in a range of 0.5-15 parts by weight with respect to 100 parts by weight of the ink composition.

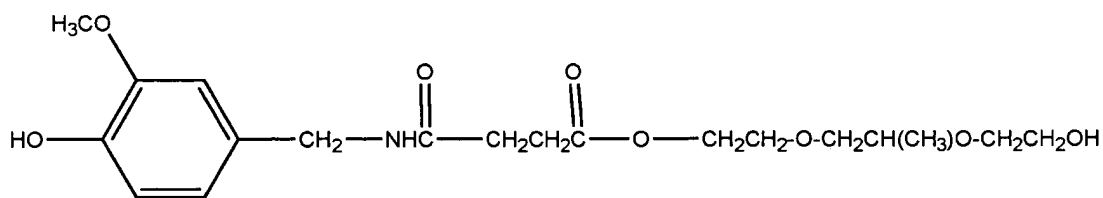
19. The ink composition according to claim 14, further including an acid or a base to increase solubility of the disperse dye in a solvent and stabilize the dispersion of the pigment.

20. The 2-methoxyphenol derivative of formula (1) of claim 1, wherein the 2-methoxyphenol derivative is one of: a toner composition, a paint, and a coating solution.

21. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (4):

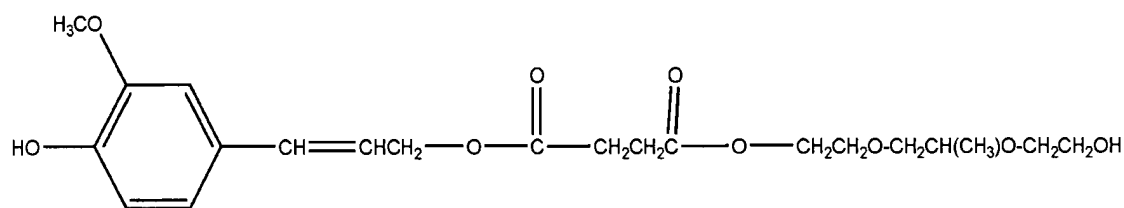


22. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (5):



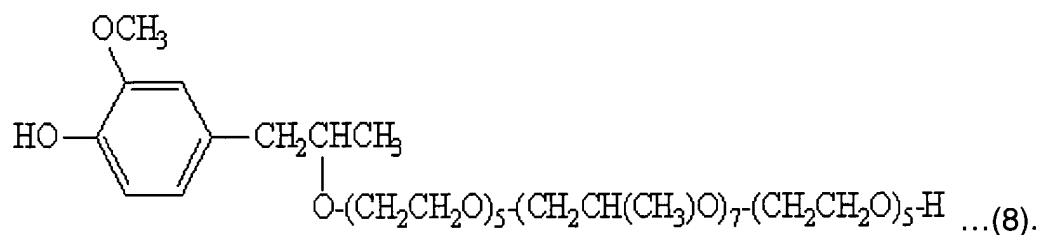
...(5).

23. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (6):



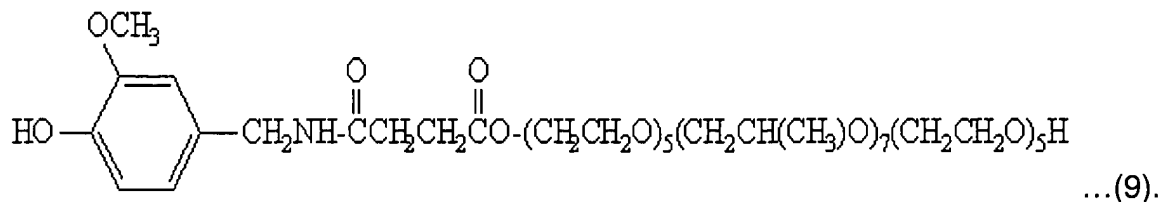
...(6).

24. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (8):

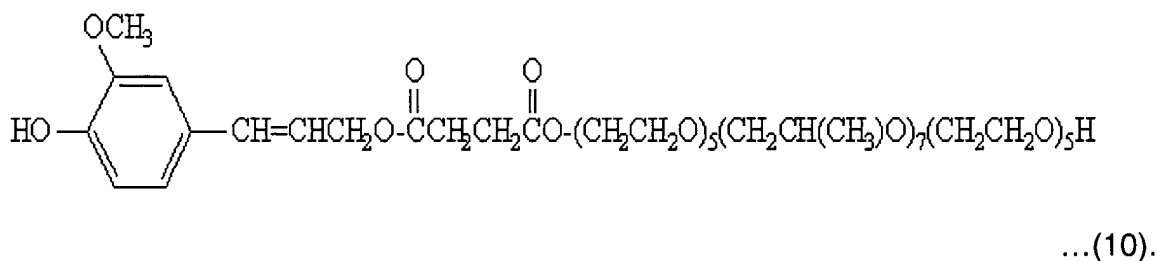


...(8).

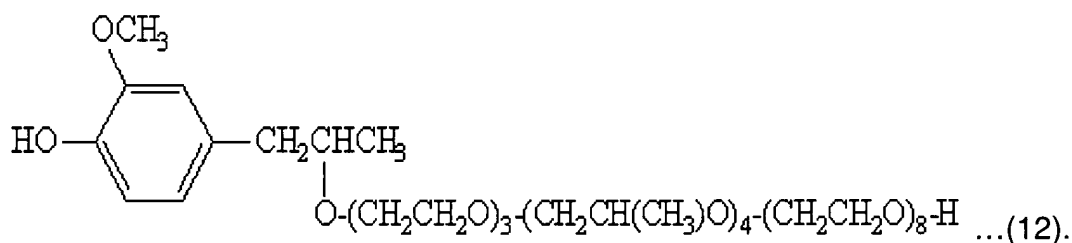
25. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (9):



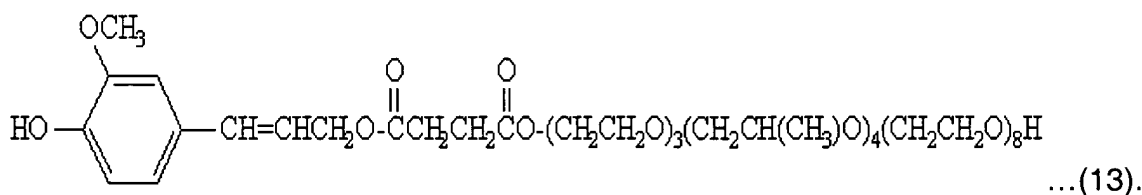
26. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (10):



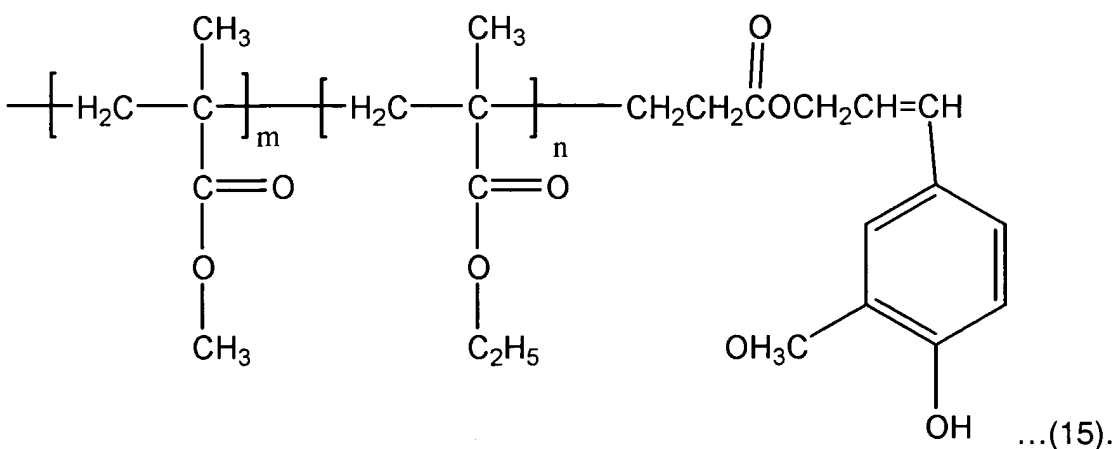
27. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (12):



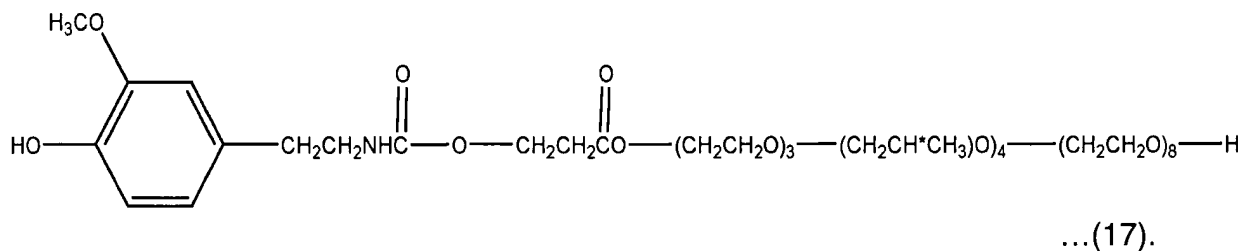
28. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (13):



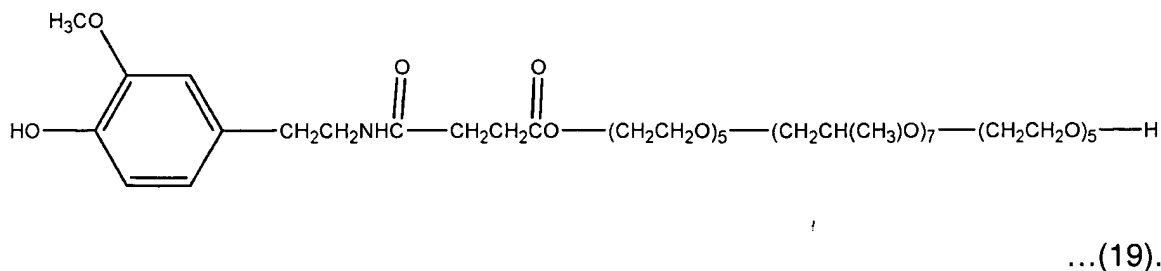
29. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (15):



30. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (17):

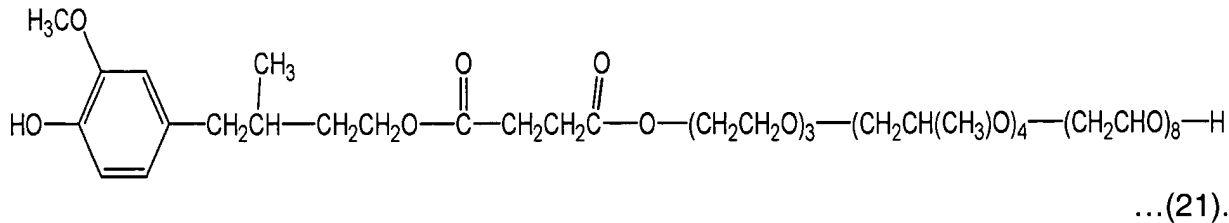


31. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (19):

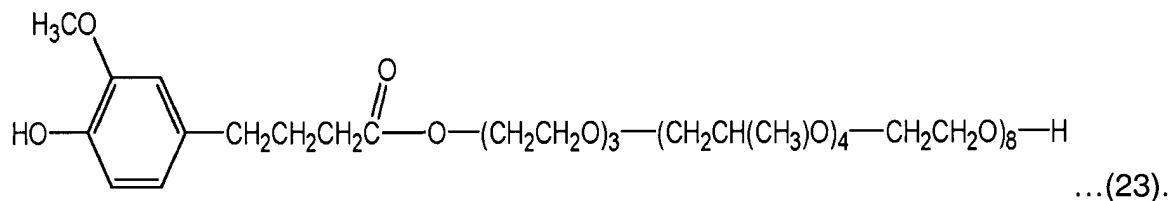


32. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a

formula of (21):



33. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (23):



34. The ink composition of claim 2, wherein the 2-methoxyphenol derivative has a formula of (24):

